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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,552	11/13/2003	Klaus Hrastnik	10191/3473	9167
26646	7590	07/28/2005	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004				PERRY, ANTHONY T
		ART UNIT		PAPER NUMBER
		2879		

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/712,552	HRASTNIK, KLAUS
Examiner	Art Unit	
Anthony T. Perry	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 05 May 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,2,4-9 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4-9 and 11-15 is/are rejected.
- 7) Claim(s) 2,8 and 9 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 13 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment filed on 5/05/2005, has been entered and acknowledged by the Examiner.

Cancellation of claims 3 and 10 has been entered.

### ***Claim Objections***

Claims 2 and 8-9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Regarding claim 2, independent claim 1 already includes the limitation of the electrode segment including platinum.

Regarding claim 8, claim 8 includes 95 mass percent as a value of platinum in the electrode segment which is not included in the range (30-94) of platinum recited in independent claim 7 from which it depends.

Regarding claim 9, independent claim 7 already includes the limitation of the electrode segment including iridium.

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9 and 11-15 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shibata et al. (US 6,720,716).

Regarding claim 7-9, Shibata et al. state that "a preferable material for the center electrode tip and the ground electrode tip is a Pt alloy containing at least one additive selected from the group consisting of Ir (50 weight % or less), Ni (40 weight % or less), Rh (50 weight % or less), W (30 weight % or less), Pd (40 weight % or less), Ru (30 weight % or less), and Os (20 weight % or less)" (see col. 8, lines 5-15). In accordance with the above teachings, Shibata et al. disclose an electrode with an electrode segment made up of platinum in a proportion of 75 mass percent, rhodium in a proportion of 10 mass percent, and iridium in a proportion of 25 mass percent. The electrode segment is placed on an electrode body formed nickel (see col. 7, lines 66-67).

Regarding claim 11, Shibata et al. disclose an electrode with an electrode segment made up of platinum in a proportion of 50 mass percent, rhodium in a proportion of 25 mass percent, and nickel in a proportion of 25 mass percent (see col. 8, lines 5-15). The electrode segment is placed on an electrode body formed nickel (see col. 7, lines 66-67).

Regarding claim 12, Shibata et al. teach that the electrode segment have up to one mass percent of osmium (see col. 8, lines 5-15).

Regarding claim 13, Shibata et al. teach the spark plug (100) including a first electrode (30) and a second electrode (40), and wherein a spark oversparks between the first electrode (30) and the second electrode (40) along a spark gap in response to application of a voltage, the spark gap leading to the electrode segment (50) of the electrode (see Fig. 1).

Regarding claim 14, Shibata et al. teach the electrode including an electrode base body composed of nickel with a copper core (see col. 9, lines 45-50). The electrode segment is fixed to the electrode base body via laser welding (col. 10, lines 10-12).

Regarding claim 15, Shibata et al. disclose a spark plug wherein the electrode is a middle electrode (30). The spark plug comprises at least one ground electrode (40), an insulator (20), and a housing (10), wherein the middle electrode (30) is regionally insulated from the housing (10) by the insulator (20), and wherein the ground electrode (40) is affixed to the housing (10) (see Fig. 1).

#### *Claim Rejections - 35 USC § 103*

Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryan (US 4,771,209).

Regarding claims 1-2 and 4, Ryan teaches a spark plug including an electrode segment that includes an alloy of platinum, copper, and iridium (see col. 4, line 59 – col. 5, line 15). Ryan does not specifically state that the platinum is in the range of 60-99 mass percent and the copper is in the range of 1-40 mass percent. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges

involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an amount of platinum and copper so that the electrode chips have a desirable ductility without compromising the oxidation and erosion resistant characteristic of the chip, since optimization of workable ranges is considered within the skill of the art.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 6,045,424) in view of Ryan (US 4,771,209).

Regarding claims 4-5, Chang et al. teach an electrode having an electrode segment including platinum in a proportion of 80 mass percent and rhodium in a proportion of 20 mass percent attached to an electrode body made of nickel. Chang et al. do not specifically teach the electrode segment containing copper.

However, Ryan teaches that refractory metal such as platinum and rhodium are brittle after sintering. Ryan teaches that the ductility can be increased by including copper to the refractory metals (see col. 5, lines 1-15). Accordingly, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to add copper to the Pt-Rh alloy taught by Chang et al. so as to increase the malleability of the electrode segment easing the process of forming the segment into a desired shape and size. Since discovering optimum or workable ranges involves only routine skill in the art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an amount of platinum, rhodium, and copper so that the electrode chips have a desirable ductility without compromising

the oxidation and erosion resistant characteristic of the chip, since optimization of workable ranges is considered within the skill of the art.

Regarding claims 4 and 6, Chang et al. teach an electrode having an electrode segment including platinum in a proportion of 80 mass percent and iridium in a proportion of 20 mass percent attached to an electrode body made of nickel. Chang et al. do not specifically teach the electrode segment containing copper.

However, Ryan teaches that refractory metal such as platinum and iridium are brittle after sintering. Ryan teaches that the ductility can be increased by including copper to the refractory metals. Accordingly, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to add copper to the Pt-Ir alloy taught by Chang et al. so as to increase the malleability of the electrode segment easing the process of forming the segment into a desired shape and size. Since discovering the optimum or workable ranges involves only routine skill in the art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an amount of platinum, iridium, and copper so that the electrode chips have a desirable ductility without compromising the oxidation and erosion resistant characteristic of the chip, since optimization of workable ranges is considered within the skill of the art.

#### *Other Prior Art Cited*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lykowski et al. (US 6,412,465) and Matsutani et al. (US 6,664,719) teach yttrium oxide being added in small amounts to more effectively restrain oxidation volatilization of electrode chips at high temperature.

Kagawa et al. (US 4,670,684) teach a chip made of Pt-20Rh-10Ni (col. 3, lines 7-10).

Hopps (US 2,239,561) teach an electrode segment (end portion) made of Pt-30Rh-10Ir (claim 3).

Kagawa (JP 02242577 A) teaches Pt-30Cu.

Matsutani (JP 11040314 A) teaches Ir-8Cu.

#### *Response to Arguments*

Applicant's arguments filed 5/05/2005 have been fully considered but they are not persuasive. With regards to the Applicant's arguments that the teachings of the Ryan reference would not lead to the limitations claims, the Examiner respectfully disagrees. In response to the Applicant arguing that the present application produces particularly low thermo-mechanical stresses and therefore the one of ordinary skill in the art would have not come to the claimed ratios of materials, the Examiner disagrees. Ryan specifically states that one of the objects of disclosed spark plug is to minimize the stresses that occur due to the different coefficients of thermal expansion between the ground electrode and the electrode segment (see col. 2, lines 11-45).

With regards to the arguments that the Shibata reference does not anticipate the claims, the Examiner disagrees. Shibata et al. state that "a preferable material for the center electrode tip and the ground electrode tip is a Pt alloy containing at least one additive selected from the group consisting of Ir (50 weight % or less), Ni (40 weight % or less), Rh (50 weight % or less), W (30 weight % or less), Pd (40 weight % or less), Ru (30 weight % or less), and Os (20 weight % or less)" (see col. 8, lines 5-15).

### Contact Information

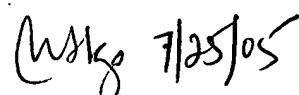
Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on **(571) 272-24597**. **The fax phone number for this Group is (571) 273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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July 25, 2005



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